

STATE OF SOUTH CAROLINA  
BEFORE THE PUBLIC SERVICE COMMISSION  
DOCKET NOS. 2019-185-E, 2019-186-E

In the Matter of:	)	
	)	
South Carolina Energy Freedom Act (H.3659)	)	
Proceeding to Establish Duke Energy	)	
Carolinas, LLC's Standard Offer, Avoided	)	
Cost Methodologies, Form Contract Power	)	
Purchase Agreements, Commitment to Sell	)	SURREBUTTAL TESTIMONY
Forms, and Any Other Terms or Conditions	)	OF JAMES F. WILSON
Necessary (Includes Small Power Producers	)	ON BEHALF OF
as Defined in 16 United States Code 796, as	)	SOUTH CAROLINA COASTAL
Amended) - S.C. Code Ann. Section 58-41-	)	CONSERVATION LEAGUE
20(A), and	)	AND SOUTHERN ALLIANCE
	)	FOR CLEAN ENERGY
South Carolina Energy Freedom Act (H.3659)	)	
Proceeding to Establish Duke Energy	)	
Progress, LLC's Standard Offer, Avoided	)	
Cost Methodologies, Form Contract Power	)	
Purchase Agreements, Commitment to Sell	)	
Forms, and Any Other Terms or Conditions	)	
Necessary (Includes Small Power Producers	)	
as Defined in 16 United States Code 796, as	)	
Amended) - S.C. Code Ann. Section 58-41-	)	
20(A)	)	
	)	

1     **I.       INTRODUCTION**

2           **Q: Please state your name, position and business address for the record.**

3           **A:** My name is James F. Wilson. I am an economist and independent consultant  
4           doing business as Wilson Energy Economics. My business address is 4800  
5           Hampden Lane Suite 200, Bethesda, Maryland 20814.

1       **Q: Have you previously submitted testimony in these proceedings?**

2       **A:** Yes I have. My direct testimony on behalf of South Carolina Coastal  
3       Conservation League and Southern Alliance for Clean Energy was submitted on  
4       September 11, 2019. My experience and qualifications were described in my  
5       direct testimony and in my curriculum vitae, which was Exhibit A to my direct  
6       testimony.

7       **Q: On whose behalf have you prepared your surrebuttal testimony?**

8       **A:** I am again testifying on behalf of the South Carolina Coastal Conservation  
9       League and the Southern Alliance For Clean Energy.

10      **Q: Are you sponsoring any additional exhibits through this testimony?**

11      **A:** No. Through my direct testimony I sponsored an expert report, *Review and*  
12      *Evaluation of Resource Adequacy and Solar Capacity Value Issues with regard to*  
13      *the Duke Energy Carolinas and Duke Energy Progress 2018 Integrated Resource*  
14      *Plans and Avoided Cost Filing*, included as Exhibit B to my direct testimony.

15      **Q: Please describe your expert report included as Exhibit B to your direct**  
16      **testimony.**

17      **A:** My expert report documents my review and evaluation of the resource adequacy  
18      studies (“DEC 2016 RA Study”, “DEP 2016 RA Study”; collectively “RA  
19      Studies”), prepared for DEC and DEP by Astrapé Consulting in 2016, and also  
20      the Duke Energy Carolinas and Duke Energy Progress Solar Capacity Value  
21      Study (“Solar Capacity Value Study”) which employs the same model and many

1 of the same assumptions that were used in the RA Studies. My expert report was  
 2 originally prepared in the context of avoided cost proceedings in North Carolina.<sup>1</sup>

3 **Q: What is the purpose of your surrebuttal testimony in this proceeding?**

4 **A:** On October 2, 2019, Duke Energy Carolinas, LLC (“DEC”) and Duke Energy  
 5 Progress, LLC (“DEP”) (collectively, “Companies” or “Duke Energy”) submitted  
 6 rebuttal testimony, including the rebuttal testimony of Glen A. Snider. I will  
 7 address just two topics touched upon in Witness Snider’s rebuttal testimony (with  
 8 references to the page numbers):

- 9 1. The relationship between extreme cold and load levels as represented in the  
 10 RA Studies (pp. 74-75).
- 11 2. The load forecast uncertainty represented in the RA Studies (p. 77).

## 12 **II. SURREBUTTAL TESTIMONY**

13 **Q: Please summarize the issues raised in your expert report with regard to the**  
 14 **relationship between extreme cold and load levels.**

15 **A:** My expert report addressed the assumptions regarding the impact of extreme cold  
 16 on load in detail, at pp. 6-13. My analysis concluded (p. 12) that the vast majority  
 17 of the winter LOLE in the 2016 RA Studies is based on a highly simplified and  
 18 inaccurate assumption about how loads would increase due to extreme  
 19 temperatures. I also found that the inaccurate formula used, which exaggerated

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<sup>1</sup> See Initial Comments of the Southern Alliance for Clean Energy, North Carolina Utilities Commission Docket No. E-100 Sub 158, Attachment B (Feb. 12, 2019), *available at* <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=9d229c61-17de-44a3-985d-f449a12cea5a>.

1 the impact of extreme cold on load, was applied to a data set that included  
2 extremely low temperatures that have not been seen in decades. These  
3 assumptions, which were new in the 2016 RA Studies, drove the winter risk and  
4 reserve margins very high.

5 My report noted that the key error was to estimate the impact of incremental cold  
6 on load levels based on observations from 20 degrees and higher, and to  
7 extrapolate this impact onto much lower temperatures, when the data clearly  
8 shows the impact is lessened at the lower temperatures. My expert report  
9 explained that the weaker impact of incremental cold on load at the lowest  
10 temperatures reflects that at such temperatures customers have already turned on  
11 all of their equipment that will help them stay warm, and in addition, some  
12 schools, offices, and other commercial, government and industrial facilities may  
13 close, reduce operations, or open late due to extreme cold conditions, reducing  
14 loads during the morning peak.

15 In particular, to note just a few findings: I found that for DEC, the equation used  
16 in the RA Study overstated loads at the coldest temperatures by 1,500 MW, and  
17 that this error had a substantial impact on winter LOLE (p. 9). I also noted that  
18 for DEC, while 69% of the LOLE was in winter in the RA Study, if weather data  
19 from 1997 to present is used (the RA Studies used 1980 to present) the LOLE is  
20 92% summer and only 8% winter (p. 12). My expert report found similar results  
21 for DEP.

1 As Witness Snider notes (p. 74), my expert report dated February 12, 2019  
2 updated a similar expert report dated February 17, 2017 prepared for an earlier  
3 North Carolina proceeding (“Wilson 2017 Report”).<sup>2</sup>

4 **Q: Did Witness Snider address these issues in his rebuttal testimony?**

5 **A:** He did not. While noting that I had raised these issues (pp. 75-76), he did not  
6 address any of these issues. Witness Snider simply noted the Companies worked  
7 with the North Carolina Public Staff (“NC Public Staff”) to address, among other  
8 issues, those raised in the Wilson 2017 Report, and ultimately the NC Public Staff  
9 was “satisfied” that the approach used was reasonable.

10 **Q: Did you have access to the Companies’ analysis that apparently satisfied the**  
11 **NC Public Staff?**

12 **A:** Yes. The analysis was documented in a joint report of the NC Public Staff, DEC  
13 and DEP addressing the reserve margin issues filed April 2, 2018 (“Joint  
14 Report”), to which was attached a Duke presentation to the NC Public Staff: *2016*  
15 *Resource Adequacy Study – Outstanding Issues*, December 12, 2017 (“December  
16 2017 Presentation”). My expert report updated the Wilson 2017 Report using an  
17 updated data set, and taking into account the Joint Report and December 2017  
18 Presentation, and got very similar results.

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<sup>2</sup> Wilson, James F., *Review and Evaluation of the Reserve Margin Determinations for the Duke Energy Carolinas and Duke Energy Progress 2016 Integrated Resource Plans*, prepared on behalf of Natural Resources Defense Council, Southern Alliance for Clean Energy, and the Sierra Club, February 17, 2017, North Carolina Public Utilities Commission Docket No. E-100 Sub 147.

1 **Q: Did the Joint Report address this issue (the relationship between extreme**  
2 **cold and load)?**

3 **A:** No it did not, as I noted in my expert report (pp. 7,12).

4 **Q: Did Witness Snider disagree with your contention in your expert report that**  
5 **the Joint Report did not address this issue?**

6 **A:** He did not.

7 **Q: Why was NC Public Staff “satisfied” that the approach used in the RA**  
8 **Studies with regard to the impact of extreme cold on load was reasonable?**

9 **A:** This is not known; while the NC Public Staff’s section of the Joint Report  
10 discusses other issues in some detail, with regard to this issue, NC Public Staff  
11 simply stated (p. 2), “After meeting with the Company, the Public Staff was  
12 satisfied that this approach was reasonable.” NC Public Staff did not state why it  
13 dropped this issue. The Companies’ section of the Joint Report was also silent on  
14 this issue.

15 The December 2017 Presentation, however, addressed this issue over twelve  
16 slides, at pp. 9-20. In particular, this presentation included a sensitivity analysis  
17 that suggested this issue had only a modest impact on reserve margins (0.3%; p.  
18 14). Perhaps NC Public Staff was swayed by this sensitivity analysis.

19 **Q: Did your expert report address the substantive discussion of this issue found**  
20 **in the December 2017 Presentation?**

21 **A:** Yes, my expert report addressed the Joint Report and December 2017  
22 Presentation at pp. 7-15, and in particular, explained (p. 13) that the sensitivity

1 analysis noted above fell far short of correcting the inaccuracies in the  
2 relationship between extreme cold and load.

3 **Q: Has NC Public Staff more recently expressed concern about this issue?**

4 **A:** Yes they have. In its Initial Statement filed February 12, 2019 in a more recent  
5 proceeding, NC Public Staff stated as follows:<sup>3</sup>

6 “As stated previously, the Public Staff raised concerns with the assumptions made  
7 in the Resource Adequacy Studies, documenting them extensively in its April 2,  
8 2018 Joint Report filed in Docket No. E-100, Sub 147. These concerns center  
9 around assumptions made regarding the relationship between cold weather and  
10 load, estimates of load forecast error distributions, and a lack of recognition of  
11 winter hardening efforts undertaken by the utilities, among others.”

12 **Q: Turning now to the load forecast uncertainty issue, please summarize your**  
13 **testimony in this regard.**

14 **A:** My expert report raised two issues that result in greatly overstating the potential  
15 for large under-forecasting errors (pp. 14-19):

- 16 1. First, the RA Studies used multiple years of load forecast uncertainty. This is  
17 not appropriate because the model used for the studies cannot also simulate  
18 how the Companies and other market participants would respond to stronger-  
19 than-expected load growth over multiple years, for example by accelerating  
20 development of new resources, delaying scheduled retirements, increasing

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<sup>3</sup> *Initial Statement of the Public Staff*, North Carolina Public Utilities Commission Docket No. E-100 Sub 158, February 12, 2019, p. 58.

1 firm purchases, allowing firm wholesale sales to expire, or expanding demand  
2 response.

3 2. Second, the load forecast uncertainty was developed in a manner that  
4 substantially misrepresents the underlying data it was based upon. As a result,  
5 the RA Studies assign a 32% probability to under-forecast errors that never  
6 occurred even once in the underlying data.

7 **Q: What did Witness Snider have to say about this issue?**

8 **A:** Witness Snider did not dispute any of my testimony in this regard. He simply  
9 asserted (p. 77), without explanation or analysis, that adopting my  
10 recommendations “would not have any impact on the allocation of LOLE or the  
11 Companies’ rate design.”

12 **Q: Do you agree that correcting the load forecast uncertainty as you recommend**  
13 **would have no impact on LOLE allocation?**

14 **A:** No; a different approach to the load forecast uncertainty could well have a  
15 substantial impact on LOLE allocation, due to the substantial differences between  
16 the summer and winter load shapes to which the load forecast uncertainty  
17 multipliers are applied.

18 Furthermore, I note that the load forecast uncertainty is supposed to represent  
19 uncertainty about future loads due to uncertainty about economic growth, and the  
20 values are based on gross domestic product forecasts errors. In the RA Studies  
21 (though not in the Companies’ forecasts) the majority of the highest peak loads  
22 occur in early winter morning hours under extreme cold conditions. It is unclear



1 that economic growth has a substantial impact on the magnitude of such peak  
2 loads. Yet the approach to load forecast uncertainty employed in the RA Studies  
3 increases all loads by a percentage amount (4% on the highest scenario), meaning  
4 that these extreme winter loads are increased by more (roughly 800 MW for DEC  
5 and 600 MW for DEP) than loads in all other hours.

6 **Q: In addition to your review and evaluation of the RA Studies, your expert**  
7 **report made a number of recommendations for future resource adequacy**  
8 **studies (pp. 24-25). Did Witness Snider disagree with any of your**  
9 **recommendations?**

10 **A:** No, he made no mention of these recommendations.

11 **Q: Appendix A to your expert report identified information about the RA**  
12 **Studies that was requested but not provided, and, as a result, limited your**  
13 **review. You recommended this additional information should be provided**  
14 **for future resource adequacy studies. Did Witness Snider dispute the need**  
15 **for any of this information?**

16 **A:** No, he made no mention of this issue about information that was requested by not  
17 provided.

18 **Q: Has the North Carolina Public Utilities Commission (“NCUC”) taken any**  
19 **actions with regard to the issues raised in your expert report?**

1       **A:** Yes. In the NCUC’s Order Accepting Integrated Resource Plans and REPS  
2       Compliance Plans, Scheduling Oral Argument, and Requiring Additional  
3       Analyses in the E-100, Sub 157 proceeding (“2018 NC IRP Order”), the NCUC  
4       stated that it “does not accept some of the underlying assumptions upon which  
5       DEC’s and DEP’s IRPs are based, the sufficiency or adequacy of the models  
6       employed, or the resource needs identified and scheduled in the IRPs beyond  
7       2020.”<sup>4</sup> The NCUC will allow the values as reflected in a Stipulation of Partial  
8       Settlement with NC Public Staff to go into effect for purposes of the Companies’  
9       most recent avoided cost proceeding.<sup>5</sup> However, the 2018 NC IRP Order  
10      scheduled an oral argument for January 8, 2020 to further consider issues  
11      surrounding Duke Energy’s load forecasts and reserve margins, including the  
12      concerns I raised.<sup>6</sup>

13      **Q: Does this complete your surrebuttal testimony?**

14      **A:** Yes it does.

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<sup>4</sup> Order Accepting Integrated Resource Plans and REPS Compliance Plans, Scheduling Oral Argument, and Requiring Additional Analysis, Docket No. E-100, Sub 157, at p. 7 (Aug. 27, 2019), *available at* <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=143d85de-b1e7-4622-b612-5a8c77e909d4>.

<sup>5</sup> Notice of Decision, Docket No. E-100, Sub 158 (October 7, 2019).

<sup>6</sup> *Id.* at p. 89, Appendix A, pp. 1-3.